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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/781,073	02/08/2001	Jim J. Chang	IL-10719	7486

7590

06/18/2004

Eddie E. Scott
Patent Attorney
P.O. Box 808, L-703
Livermore, CA 94551

EXAMINER

TRAN, LEN

ART UNIT

PAPER NUMBER

1725

DATE MAILED: 06/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/781,073

Applicant(s)

CHANG ET AL.

Examiner

Len Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 1-12, 26-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 14, 2004 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 13-18 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Inagawa et al (US 5,166,493).

As to claims 13, 15, 17 and 21, Inagawa et al disclose the method of drilling a hole in a material to have a final diameter comprising the steps of generating a first and second laser beam (2 and 4), generating a first high power percussive laser beam that has greater power than the

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second laser beam, the first high power percussive beam producing a first level of power and the first high power percussive laser beam being focused to a first high power percussive laser beam spot diameter that is slightly smaller than the final diameter of the hole (col. 3, lines 49-64), directing the first high power percussive laser beam at the material to remove the bulk of the material to form a ragged hole without trepanning, generating a second laser and trepanning laser beam that has less power, *short wavelength laser beam*, than the first laser beam (col. 4, lines 1-6), directing and trepanning by tracing the second and trepanning laser beam along the diameter and at the hole being formed for expanding the ragged hole having a diameter slightly smaller than the final diameter of the hole so that the hole is at the final diameter and for accurately cleaning up the ragged hole so that the final hole has the final diameter and has dimensions of high precision (col. 4, lines 7-26).

As to claims 14 and 16, Inagawa et al disclose the first laser being CO2 laser, wherein CO2 laser emits infrared radiation operated in an ablative mode (col. 3, lines 60-63).

As to claim 18, Inagawa et al disclose a first laser is an infrared and the second laser is a low power, short wavelength laser beam (col. 3, line 60 and col. 4, line 3).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 19, 20, 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inagawa et al (US '493) as applied to claim 13 above in paragraph 3, and further in view of Durheim (US 6,070,813).

As to claims 19 and 20, Inagawa et al disclose the second laser is focused on a spot from one to ten times smaller than the diameter of the ragged hole and is used to polish the sides of the hole to obtain high dimensions (col. 4, lines 6-52), but lacks the mentioning of tracing the ragged hole a multiplicity of times until there is little ragged material on the sides.

However, Inagawa et al is concerned with smoothing the surface after the first step. The trepanning step, second step, is for smoothing the surface. Therefore, it would have been obvious that Inagawa et al traced around the ragged hole a multiple of times to get an accuracy and excellent wall shape as disclosed in column 4, lines 50-51.

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Furthermore, Durheim is introduced to show tracing, trepanning, multiple times around the ragged hole (col. 5, lines 9-30) for the purpose of enlarging and also removing burrs on the surface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide the trepanning laser around the ragged hole a couple of times as taught by Durheim, in Inagawa et al in order to enlarge and remove the burrs from the surface.

As to claims 22-25, Inagawa et al fail to teach the first and second laser beams are produced by a single laser, first laser removes the bulk of material, wherein the hole does not extend entirely through the material, leaving a thin membrane at the bottom of the hole, and removing the thin membrane with a second laser.

However, Durheim discloses two lasers beams, first and second laser beams, produced by a single laser (10) for the purpose of saving costs, since two separate lasers are expensive.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a single laser apparatus with two beams as taught by Durheim, in Inagawa et al in order to save costs.

Furthermore, Durheim discloses controlling a first laser to remove the bulk of material, leaving a thin membrane (figures 2a & 2b) and followed by a second laser to remove the entire thin membrane (figure 2C) for the purpose of forcing the disintegrated material upward and deposit as waste product (col. 5, lines 40-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to remove the bulk material, leaving a thin membrane, then followed by second laser as taught by Durheim, in Inagawa et al in order to force the disintegrated material upward and deposit as waste products.

Response to Arguments

7. Applicant's arguments with respect to claims 13-25 and amendments to claim 13 filed on April 14, 2004, have been considered but are moot in view of the new ground(s) of rejection as above in paragraph 3 and 6.

The amendments to claim 13, "said step of generating a first laser beam comprising generating a *first high power percussive laser beam that has greater power than said second laser beam*" overcomes the rejection of Durheim as the primary reference. However, Inagawa et al in view of Durheim disclosed the claimed invention as explained in paragraph 3 and 6.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Len Tran whose telephone number is (571) 272-1184. The examiner can normally be reached on M-F, 8:30 - 5.

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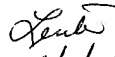
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Len Tran

Examiner

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6/15/04

LT

June 15, 2004